

CLAIMS

What is claimed is:

1. A method for forming an image, the method comprising, in order, the steps of:

- 5 a) thermally imaging an imageable element, the imageable layer comprising an imageable layer over a substrate, and forming imaged regions and complementary unimaged regions in the imageable layer,

in which:

- 10 the imageable layer comprises a thermally sensitive polymer that comprises quaternary ammonium salts of carboxylic acids; and

the imaged regions of the imageable layer are more oleophilic and less hydrophilic than the unimaged regions of the imageable layer;

- 15 b) contacting the imageable layer with an aqueous solution comprising about 0.05 wt% to about 5 wt% of an added organic acid having a pKa of about 1 to about 6;

c) contacting the imageable layer with ink; and

d) transferring the ink to a receiving material and forming the image.

2. The method of claim 1 in which steps c) and d) are repeated, in order, at least 50 times.

- 20 3. The method of claim 1 in which the imageable layer additionally comprises a photothermal conversion material.

4. The method of claim 3 in which thermal imaging is carried out with infrared radiation.

- 25 5. The method of claim 4 in which the aqueous solution comprises about 0.1 wt% to about 4 wt% of the added organic acid.

6. The method of claim 5 in which the added organic acid has a pKa of 1.1 to 5.

7. The method of claim 6 in which step b) is carried out on press.
8. The method of claim 1 in which the aqueous solution is a fountain solution.
9. The method of claim 8 in which the total concentration of organic acid in the fountain solution is about 0.05 wt% to about 5 wt%.
10. The method of claim 9 in which the total concentration of organic acid in the fountain solution is about 0.1 wt% to about 4 wt%.
11. The method of claim 10 in which steps c) and d) are repeated, in order, at least 50 times.
12. The method of claim 11 in which the added organic acid is selected from the group consisting of formic acid, acetic acid, acrylic acid, propionic acid, butyric acid, isobutyric acid, methacrylic acid, glycolic acid, diglycolic acid, lactic acid, oxalic acid, malonic acid, succinic acid, citric acid, malic acid, tartaric acid, maleic acid, fumaric acid, glyoxylic acid, pyruvic acid, mandelic acid, hydroxybutyric acid, glyceric acid, gluconic acid, and mixtures thereof.
13. The method of claim 1 in which the aqueous solution is a solution of the added organic acid in water and in step c) the imageable layer is contacted with the ink and with a fountain solution.
14. The method of claim 13 in which steps c) and d) are repeated, in order, at least 50 times.
15. The method of claim 14 in which the added organic acid is selected from the group consisting of formic acid, acetic acid, acrylic acid, propionic acid, butyric acid, isobutyric acid, methacrylic acid, glycolic acid, diglycolic acid, lactic acid, oxalic acid, malonic acid, succinic acid, citric acid, malic acid, tartaric acid, maleic acid, fumaric acid, glyoxylic acid, pyruvic acid, mandelic acid, hydroxybutyric acid, glyceric acid, gluconic acid, and mixtures thereof.
16. The method of claim 15 in which the aqueous solution comprises about 0.1 wt% to about 4 wt% of the added organic acid.

17. The method of claim 1 in which the aqueous solution comprises about 0.1 wt% to about 4 wt% of the added organic acid.

18. The method of claim 1 in which the aqueous solution comprises about 0.15 wt% to about 3 wt% of the added organic acid.

5 19. The method of claim 1 in which:

the imageable layer additionally comprises a photothermal conversion material;

thermal imaging is carried out with infrared radiation;

10 the aqueous solution comprises about 0.1 wt% to about 4 wt% of the added organic acid;

the added organic acid has a pKa of 1.1 to 5; and

steps c) and d) are repeated, in order, at least 50 times.

20. The method of claim 19 in which steps a) and b) are carried out on press, and the aqueous solution is a fountain solution.

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